DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/29/09 has been entered.

Claim Objections

Claim 18 is objected to because of the following informalities: in the second line of said claim, the claim recites "sole metal chalcogenide layer or the a plurality of metal chalcogenide layer". Applicants are requested to delete either "the" or "a" whichever is appropriate with reference to antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 16-17 are dependent upon a canceled claim; therefore, it is indefinite.

For the purpose of examination, said claim is assumed to be dependent on claim 1.

Claim 31 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 31 recites the broad recitation "10 to 120% by weight" of water, and the claim also recites preferably "15 to 55% by weight" of water which is the narrower range within the broader range in the same claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-12, 14-17, 19-36 and 39-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,964,936 to Reisser in view of U.S. Patent No. 5,624,486 to Schmid et al. as that evidenced by U.S. Patent No. 6,648,957 to Andes et al.

Regarding claims 1-2, 16-17, 24, 26-31, and 33-36, Reisser teaches oxidized aluminum or aluminum alloy pigments having a content of metallic aluminum of not more than 90% by weight with respect to the total weight, wherein the pigments are colored, flake-like, having good shine, high level of color intensity, etc. and a process for the production thereof and use thereto the special-effect pigments and as base pigment for further coloring with organic or inorganic color pigments (Abstract; column 1, lines 55-68). The reference, further, disclose the oxidation of aluminum pigments in aqueous media starting in column 3. Additionally, the Reisser discloses that coloring aluminum pigments is possible, under specific conditions, by virtue of controlled oxidation in aqueous alcohol solutions without the pigment particles agglomerating, and that with increasing oxide content, the surface of the pigment flakes or plates usually becomes rougher. It is to be noted that Reisser emphasize that the reference teaches pigments which exhibits excellent metal shine with a metal content of about 20 to not more than

90% by weight (column 4, lines 1-5). Also, Reisser teaches that the starting aluminum pigment has more than 5% by weight of some suitable foreign metals such as iron, manganese, etc. (column 5, lines 4-9) and this is seen to read on the limitation of instant claim 27.

Moreover, the reference teaches a process during which flake-like aluminum pigments are oxidized without previous degreasing in a mixture comprising one or more water-miscible solvents, water and possibly a suitable base at a pH-value of from 7 to 12 with specific proportion of water in the solvent mixture relative the mixture (column 4,lines 37-51). Reisser discloses that the amount of water is from 10-120% by weight, and preferably from 15-55% by weight (column 4, lines 45-46). The reference discloses alcohols such as ethanol, n-propanol, i-butanol, methoxypropanol, and many more as water-miscible solvents (column 5, lines 9-15). Reisser, also, goes on to say that the progress of the reaction can be followed by means of the production of hydrogen, and finally, with increasing oxide layer thickness on the pigments (i.e. aluminum oxide-containing or aluminum oxide/hydroxide-containing layer envelops aluminum core or aluminum alloy core), there follows a phase in which generation of hydrogen decreases and finally comes to a halt (column 5, lines 26-36). Since Reisser discloses the use of organic compounds such as n-propanol, i-butanol, methoxypropanol, etc., this is taken to read on the limitation of instant claim 24 with reference to surface modification with organic compounds absence clear and specific evidence showing the contrary.

The reference, additionally, discloses that the pigments thus obtained have an excellent mechanical resistance which is due to the alack of agglomerated fine

component and to the fact that the pigment flakes or plates according to said invention comprise a metal core which is stiffened on both sides with homogenous oxide layers of uniform thickness (column 6, lines 1-12). It is the examiner's position that water is utilized as an oxidizing agent motivated by the fact that Reisser clearly teaches that the amount of water relative to aluminum affects oxidation (column 4, lines 43-51).

It is to be noted that as **admitted by Applicants on the record in pages 14-15 and 17 of instant application specification**, the production of the aluminum oxide/hydroxide layer on aluminum core or aluminum alloy core was carried out according to the process disclosed in **EP 0 848 735** which is the European application of **Reisser** used hereby.

With reference to the limitation of "obtained by chemical wet-process oxidation....based on the total weight of the pigment", it is to be noted that although said limitation has been addressed above, this is the process by product limitation, and thus, does not add patentable weight to the examination of the product claims. See MPEP § 2113.

With further reference to claim 35, it is to be noted that Reisser teaches by varying parameters such as temperature, it is possible to change the degree of oxidation which then affects the color of the pigment (aluminum core or substrate which is oxidized in the surface); as stated by the reference the specific conditions can be ascertained by means of routine experimentation based on the desired end color (column 4, lines 20-28). Thus, carrying out step (a) of the process of claim 28 as recited

in instant claim 35 would have been known to a person of ordinary skill in the art through routine experimentation with the aim of optimizing the intended color.

Reisser does not expressly teach a thickness value of from 50-300 nm for the enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer; also, the reference does not literally disclose a color flop as that recited in the instant claims.

Nevertheless, it would have been obvious to a person of ordinary skill in the art to have obtained a thickness such as recited in instant claims motivated by the fact that enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer is produced through an identical process as that claimed instantly; therefore, it is expected to produce the same product having the same characteristics. Thus, the enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer is expected to have the same thickness and color flop as claimed instantly and burden is upon applicants to clearly shown evidence otherwise.

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Reisser does not expressly disclose at least one layer of a colored metal chalcogenide layer having a refractive index of >1.95 onto the enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer.

However, it would have been obvious to have applied a coating of a colored chalcogenide layer of high refractive index of higher than 1.95 motivated by the fact that Schmid et al., drawn to luster pigments based on multiply coated platelet-like metallic substrate, disclose a coating of silicon oxide, aluminum oxide or aluminum oxide

hydrate onto the substrate (the substrate could be aluminum or aluminum alloy) over which a second layer of metal and/or nonselectively absorbing metal oxide such as magnetite is formed (Abstract; column 3, lines 35-39; column 4, lines 26-34). It is to be noted that the substrate (i.e. core) is what has been detailed out above by Reisser which undergoes oxidation to form an enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer. Further, motivation for using the teaching of Schmid et al. on forming a high refractive index colored chalcogenide layer onto the pigment of Reisser would be, also, the fact that Reisser clearly teaches that the base pigment taught by Reisser is used for coating with a color pigment bearing metal oxide layer comprising an oxidized aluminum pigment as described in Reisser (column 11, lines 60-65), and that the particular advantage of the use of the pigment of Reisser is as a base material for additional coloring with inorganic or organic color pigments (column 6, lines 46-51). Finally, it should be noted that magnetite is a high refractive index material which is known to have a refractive index of higher than 1.8 as that evidenced by Andes et al. (column 3, lines 36-45).

With further reference to claim 33, Schmid et al. disclose that the magnetite layer (i.e. chalcogenide layer) is depositable from metal salt solutions (column 4, lines 33-36).

With reference to the formation of a mixed layer and that the enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer and the chalcogenide layer penetrate each other at least partly, it is to be noted that it is the Examiner's position that once a the chalcogenide layer in formed onto the substrate which has an enveloping aluminum oxide-containing or aluminum oxide/hydroxide-

containing layer as that taught by Reisser, there forms a mixed layer of the two because once a layer is applied onto another layer, it is apparent that the top layer would penetrate through the surface of the lower layer through any opening/gap/pore no matter how tiny and minimal in size they might be. In fact, the above is motivated by the fact that Reisser clearly teaches that by oxidation, the surface of the aluminum pigment becomes rougher; thus, this is interpreted as creating openings or gaps for the coating layer to penetrate into.

The burden is shifted upon applicants to show that the surface of the enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer is so smooth as having no openings in any form such as gap, pore, etc. that the material of another layer could be penetrated.

Regarding claim 3, it is noted that Reisser teaches that hydrogen release during oxidation affect the thickness of the enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer on the aluminum core or aluminum alloy core and that by oxidation, the surface of the pigment is roughened (column 1, lines 57-60; column 5, lines 30-35). Therefore, it is apparent that the thickness of the roughened surface can be controlled.

Nevertheless, it should be noted that the thickness of the mixed layer would be the same thickness/depth of the roughened surface because it's the openings or gaps within the roughened surface that the chalcogenide layer which is applied onto the enveloping layer penetrate into. Thus, it is expected for the roughened surface to have the same thickness/depth as that recited in instant claims for the thickness of the mixed

layer with consideration that the roughened surface is the place where the top layer or the chalcogenide layer material is penetrated into specially because the reference discloses an identical process in forming an enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer on an aluminum core. Thus, it is expected that the thickness/depth of the roughened surface would be the same as that claimed instantly absence clear and specific evidence proving the contrary.

Regarding claim 4, it is to be noted that since the combination of references, in particular Reisser teaches an identical process of making an enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer on an aluminum core or aluminum alloy core, the characteristic recited in instant claim 4 would have been expected to follow from the composition of the reference(s) absence clear and specific evidence showing the contrary.

Regarding claims 5, 10 and 19, it is to be noted that the combination of references, in particular, Schmid et al. disclose a coating of silicon oxide, aluminum oxide or aluminum oxide hydrate onto the substrate (the substrate could be aluminum or aluminum alloy) over which a second layer of metal and/or nonselectively absorbing metal oxide such as magnetite is formed. Therefore, it is apparent that there exists a layer having a refractive index of lower than 1.8 between the enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer and the colored chalcogenide layer (i.e. magnetite) as that evidenced by Andes et al. (column 1, lines 45-50 and column 3, lines 50-55) which discloses that SiO_2 and Al_2O_3 are both

considered low refractive index materials having refractive index in the range of 1.35-1.8.

Regarding claims 6 and 7, as noted above, Reisser teaches that hydrogen release during oxidation affect the thickness of the enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer on the aluminum core or aluminum alloy core and that by oxidation, the surface of the pigment is roughened (column 1, lines 57-60; column 5, lines 30-35). Therefore, it is apparent that the thickness of the roughened surface can be controlled.

Nevertheless, it should be noted that the thickness of the mixed layer, as recited instantly, would be the same thickness/depth of the roughened surface, as disclosed by the reference, because it's the openings or gaps within the roughened surface that the layer coating the enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer would penetrate into. Thus, it is expected for the roughened surface to have the same thickness/depth as that recited in instant claims for the thickness of the mixed layer with consideration that the roughened surface is the place where the top layer or the chalcogenide layer material is penetrated into specially because the reference discloses an identical process in forming an enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer on an aluminum core. Thus, it is expected that the thickness/depth of the roughened surface would be the same as that claimed instantly absence clear and specific evidence proving the contrary.

Regarding claim 8, it is to be noted that as detailed above, the combination of Schmid et al. in view of Reisser teaches a coating of silicon oxide, aluminum oxide or

aluminum oxide hydrate is formed onto the pigment of Reisser over which a coating of a metal and/or nonselectively absorbing metal oxide (i.e. magnetite) is formed. As shown above, aluminum oxide has a refractive index of lower than 1.8 and magnetite has a refractive index higher than 1.95.

It is the examiner's position to consider the two coatings of aluminum oxide and magnetite as a mixed layer. In addition, Schmid et al. teach that the first coating (i.e. silicon oxide, aluminum oxide or aluminum oxide hydrate) has a thickness of from 1-800 nm. Therefore, although Schmid et al. do not expressly disclose a thickness for the metal and/or nonselectively absorbing metal oxide coating (i.e. magnetite), it is the examiner's position that the total thickness of the two coatings would be more than 10nm considering the fact that the thickness of one may be a value higher than 10 nm.

Regarding claim 9, it is to be noted that since the combination of references, in particular Reisser teaches an identical process of making an enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer on an aluminum core or aluminum alloy core; furthermore, as noted above, the combination of Reisser with Schmid et al. is obvious in order to coated the pigment of Reisser with coatings of a metal oxide having a refractive index lower than 1.8 and then, a coating of a metal oxide having a refractive index of higher than 1.95. Therefore, the characteristic recited in instant claim 9 would have been expected to follow from the composition of the reference(s) absence clear and specific evidence showing the contrary. It should be noted that higher than 1.8 has overlapping ranges with higher than 1.95, and

overlapping ranges have been held to establish prima facie obviousness. MPEP § 2144.05.

Regarding claims 11 and 12, it is the examiner's position that the aluminum core of Reisser have a layer thickness of less than 150 nm because Reisser discloses the identical process as that claimed in instant claims with reference to step (a) of the process of claim 28 and with reference to the oxidation of aluminum core and details surrounding that as recited in claim 1; it is to be noted that both segments of claims concerns the aluminum core. Furthermore, the Applicants admit in the record (pages 14-15 and 17 of instant application specification) that the production of the aluminum oxide/hydroxide layer was carried out according to the process disclosed in EP 0 848 735 which is the European application of Reisser used hereby.

Regarding claim 14, the combination of Reisser in view of Schmid et al. as evidenced by Andes et al. disclose a pigment and process of making it which comprise oxidizing aluminum substrate or core to form an aluminum oxide layer upon which other layers such a low refractive metal oxide layer and a colored high refractive metal oxide layer are applied. The fact that the references, specially Schmid et al. reference which teaches the coating of low and high refractive index metal oxide layers onto aluminum substrate or core, are silent to any intrinsic color for the metal chalcogenide layer, is seen to read on the limitation of instant claim absence clear and specific evidence to the contrary.

Regarding claim 15, it is to be noted that the claim recites "...at least one metal chalcogenide layer or a plurality of chalcogenide layer..."; therefore, the existence of a

plurality of chalcogenide layer is optional, and thus, the "alternating configuration" as recited in instant claim 15 is optional too. It is furthermore, noted that the chalcogenide layer (i.e. magnetite) as noted above is colored and has a refractive index of higher than 1.95.

Regarding claims 20-21, Schmid et al. teach the application of an additional coating layer onto the high refractive index coating which itself is applied onto a low refractive index coating, wherein said additional coating layer comprises aluminum oxide (column 4, lines 51-58).

Regarding claims 22-23 and 25, since the combination of references teach an effect pigment having an aluminum core or substrate oxidized to have a rough surface of aluminum oxide which is coated with a low refractive metal oxide layer and then a high refractive metal oxide layer, the characteristics concerning the form factor values and the color flop as those recited in instant claims 22-23 and 25 are expected to follow from the composition of the references absence clear and specific evidence showing the contrary. This is specially motivated by the fact that Reisser, in particular, teaches an identical process of making an enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer on an aluminum core or aluminum alloy core, and further, Reisser makes it clear that said aluminum core having an enveloping aluminum oxide-containing or aluminum oxide/hydroxide-containing layer is used as a base material for additional coloring with organic or inorganic pigments.

Regarding claims 39-43, the combination of references in particular, Schmid et al. clearly teach the use of their pigment, which is multiple coatings as detailed out

above onto aluminum substrate or core, in coatings, decorative cosmetics and many more areas (column 1, lines 55-59; column 8, lines 42-50). It is again noted that it was made obvious to have applied the coating layers of Schmid et al. onto the aluminum core of Reisser which had been oxidized.

It is to be noted that although the combination of references may not expressly and literally disclose the use of the pigment in a nail varnish, said combination discloses the use of the pigment in decorative cosmetic preparations, and nail varnishes are clearly considered decorative cosmetic preparations. In other words, combination of references as detailed above, broadly reads on the limitations of instant claims.

Regarding claim 32, the combination of references in particular, Reisser teaches the use of a suitable base in addition to water, water-miscible solvents and aluminum pigments in oxidizing the aluminum pigments; thus, it is the examiner's position that the suitable base would act as a catalyst absence clear and specific evidence showing the contrary.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reisser in view of Schmid et al. as that evidenced by Andes et al. and further evidenced by U.S. Patent No. 5,763,086 to Schmid et al.

The combination of Reisser in view of Schmid et al. as that evidenced by Andes et al. disclose aluminum core which is oxidized to form an aluminum oxide on the surface of the core is further coated with a metal oxide layer having a low refractive

index, and then coated with a colored metal oxide layer having a high refractive index (i.e. colored chalcogenide coating layer as recited in instant claims) such as magnetite.

The above combination does not disclose the use of zirconium oxide, tin oxide, zinc oxide, or titanium oxide as the layer coating the metal oxide layer having a low refractive index layer; Schmid et al. ('486), also, teach the use of zirconium oxide, tin oxide, zinc oxide, or titanium oxide in a coating over the colored metal oxide layer having a high refractive index (i.e. colored chalcogenide coating layer as recited in instant claims); nevertheless, it would have been obvious to have substituted any of these oxides with magnetite (i.e. iron oxide) in said coating motivated by the fact that as shown by Schmid et al. ('086), zirconium oxide, tin oxide, zinc oxide, titanium oxide and iron oxide are all considered high refractive index metal oxides used in coatings. Therefore, it is the examiner's position that substitution of one high refractive index metal oxide layer known in the pigment art for another is well within the scope of a skilled artisan absence clear and specific evidence showing the contrary.

Response to Amendment

Applicants' amendment to claim 1, filed April 24, 2009, is acknowledged. However, said amendment does not place the claim or the application in condition for allowance.

Response to Arguments

Applicant's arguments, see pages 10-13, specifically, with reference to aluminum oxide-containing or aluminum oxide/hydroxide-containing layer enveloping the aluminum core or aluminum alloy core obtained by the process recited instantly which reflects the step (a) of the process recited in claim 28, filed April 29, 2009, with respect to the rejection(s) of claim(s) 1-12, 14-36, and 39-43 under Title 35 U.S.C. 103(a) over Schmid et al. in view of Andes et al. have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent No. 5,964,936 to Reisser in view of Schmid et al. as evidenced by Andes et al.

With reference to Applicants' declaration dated 4/29/2009 and the previous one dated 9/17/2009, it is to be noted that said declarations, which are referring to Schmid et al. reference specifically regarding the aluminum core or aluminum alloy core being oxidized, are not longer applicable since a **new ground rejection** has been presented hereby above.

Nevertheless, it is to be noted that said declarations were not commensurate with the scope of the claims because of the following reasons: (1) **no steps for the experiment(s) conducted based on the reference (i.e. Schmid et al.) process had been outlined in the declaration, (2) no steps for the experiment(s) conducted based on the instant application process had been outlined in the declaration, (3) what specific steps or procedure were taken or considered in reaching the results stated in the declaration, (4) no indication to any roughness has been made in instant claims.**

Again, it is to be noted that since the declarations were submitted with reference to Schmid et al. reference as a primary reference, the declarations are not applicable anymore because a new ground of rejection has been presented.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PEGAH PARVINI whose telephone number is (571)272-2639. The examiner can normally be reached on Monday to Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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